Global Scientific JOURNALS

ANTIRETROVIRAL THERAPY UTILISATION AND PICTOGRAM USE AMONG PEOPLE LIVING WITH HIV IN SOUTH EAST NIGERIA.

Umeononihu Uzoma Emmanuela[1], Umeononihu Osita Samuel*[2],

Emelumadu Obiageli Fidelia[3] and Ezenyeaku Chijioke Amara[3]

[1] Department of Pharmacy, NnamdiAzikiwe University Teaching Hospital, Nnewi, Anambra State, Nigeria. uzo.umeononihu@gmail.com

*[2] Department of Obstetrics and Gynaecology, Nnamdi Azikiwe University, Awka, Anambra State, Nigeria. docomene@gmail.com

[3]Department of Community Medicine, Nnamdi Azikiwe University Teaching Hospital, Nnewi, Anambra State, Nigeria. fidemelumadu@gmaill.com and cezenyaku@gmail.com

ABSTRACT

Purpose: Adherence to antiretrovirals has been identified to be the main bane of success in the management of HIV/AIDS. This study assessed the effect of pictogram on antiretroviral therapy utilization when used in pharmaceutical counseling and dispensing.

Research methods and procedure: An intervention study was carried out among participants grouped into control and intervention groups selected using simple random sampling by balloting. All participants were HIV positive, treatment naïve clients. Data was collected using pre-tested, semi-structured, interviewer –administeredquestionnaire. Dataanalysis was undertakenusing SPSS version 20 statistical package. The level of statistical significance was set at 0.05.

Results: A total of 322 participants were surveyed; 156 control and 166 intervention respondents. Only 115(35.7%) of all respondents were males. There were more female respondents than males across both groups. Across the three clinic visits, greater percentages of the respondents from the intervention group were medication-schedule adherent than the control group respondents. At the 3rd visit, while 11(7.1%) of the control group took their medications outside the counseled time, only 7 (4.2%) of the intervention group took their antiretrovirals outside of the counseled time.

For missed doses, only 18(10.8%) of the intervention group missed at least one dose, while it was 30(19.2%) for the control group by the 3rd clinic visit.

Conclusion: This study demonstrated that pictogram use in pharmaceutical counseling and dispensing had a positive effect on the utilization of the antiretroviral therapy by the patients. The use of pictogram gave clear superiority to the non-use of pictogram in most of the antiretroviral utilization features assessed. All stakeholders should therefore give concerted efforts towards absorbing pharmaceutical pictograms as intrinsic component of the HIV care program and more emphasis should be given to the linking of ARV dose intake to a normal physical daily routine like meal time, prayer time to optimize ARV utilization.

INTRODUCTION

The drug treatment for HIV is called antiretroviral therapy (ART). ART refers to that treatment of HIV that uses a combination of two or more drugs. ART does not cure HIV, but it is an important part of managing the infection, supporting health, maintaining or improving the quality of life and helping the people living with HIV to live longer and healthier lives. (HIVInfo, 2021)

Nigeria has the second highest HIV epidemic globally. However, the HIV prevalence among Nigerian adults is far less (2.8%) than other sub-Saharan African countries such as South Africa and Zambia (18.8% and 11.5% respectively). The high population figures of Nigeria is largely at play here as it was reported that 3.1 million Nigerian people were living with HIV in 2017 (UNAIDS, 2018)

A pictogram, also called a pictogramme or pictograph is a collective term that describes both 'symbols' and 'pictorials' that convey ideas or concepts through their pictorial resemblance of a physical object(Health Literacy and Patient Education Guide, 2019). It is a picture that represents a word or an idea by illustration.It is a picture representing a word or phrase, a diagram that uses pictures to show the amounts or numbers of a particular thing (Hornby, 2000).Pictographs which were used as the earliest known form of writing, remain in common use today serving as representational signs, instructions, or diagrams as seen in road/traffic signs which are global standards.

Pictograms often transcend languages in that they can communicate effectively to people of different languages equally effectively, even when cultures and languages are radically different.

Medical pictograms are standardized graphic images that help convey medical instructions, precautions and/ or warnings to patients and consumers.Theseconstitute part of thetools deployed in health care delivery geared towards improvingpatients' treatment outcomes in pursuance of theSustainable Development Goal (SDG) 3 which pivots ensuring healthy lives and promoting the well-being of people at all ages (United Nations Sustainable Development goals, 2019).

The search for new ways to optimize the use of medications by patients has led the pharmaceutical community to promote the idea of introducing pictograms into routine practice. The main intention of pictograms is to ease up patients' adherence and to reduce potential risks or errors associated with the use of medications (Piotr, Damian andMarcin,2018). Pictograms are quite useful in passing on medical information to patients and caregivers with lower level education and for whom the English language is a second language (Health Literacy and Patient Education Guide, 2019).Sometimes, healthcare information are complex for patients, therefore it is important to ensure they receive clear and understandable information.It is a common assumption among healthcare professionals that their information is simple and easily understandable.However in reality, they are often misunderstood (d'Acremont*et al*, 2019).Individuals

with limited literacy are often faced with high challenges of interpreting

pharmaceutical drug labels and medical instructions. This may result in

unintentional drug misuse or poor utilization of prescribed drug therapies.

Adherence describes the extent to which a patient's behavior coincides

with the given health instructions. Adherence to antiretroviral therapy (ART)

is an essential component of individual and programmatic treatment

success. Since the introduction of combination antiretroviral therapy in the

mid-1990s, human immunodeficiency virus (HIV)–1 infected patients have

experienced decreasing levels of morbidity and mortality in both high-

income countries and low- and middle-income countries. Higher levels of

drug adherence are associated with improved virological, immunological

and clinical outcomes. Adherence rates exceeding 95% are necessary in

order to maximize the benefits of ART (Goode, McMaugh, Crisp, Wales

and Ziegler, 2010). Adherence is crucial for delaying or avoiding the

development of drug resistance and ensuring maximum durability of the

first-line ARV regimen. Therefore measures to ensure optimal adherence

should be taken before commencement of therapy, at initiation and should

continue during therapy.

It has been strongly recommended that treatment regimens for people

living with HIV/AIDS should be clarified in order to improve utilization of

therapy (Chesney, 2000).Such clarifications include pill number, dosing time, meal restrictions.

Adherence to antiretrovirals has been said to be the main bane of treatment success in HIV care. It is the key to staying healthy for people living with HIV/AIDS (HIV Info, 2019). Adherence score of 95% and above are recommended for optimal treatment outcome in the management of HIV (Bezabhe, Chalmers, Bereznicki and Peterson, 2016). When there is poor ART utilization and 95% adherence score is not achieved, it increases the risk of the HIV multiplying, mutating to drug-resistant strains of the HIV and ultimately leading to HIV treatment failure. Optimizing the percentage of HIV infected persons who utilize their ART maximally is the prerequisite to achieving the recommended adherence rate is essential for reducing morbidity and mortality and reducing the likelihood of onward HIV transmission (Beer and Jacek, 2015).

There are varying records of utilization of ART globally by people living with HIV/AIDs. A systematic review and meta-analysis of 53 studies published between 2005 and 2016, fielding 22,603 people living with HIV in Latin America and Caribbeanshowed that the average adherence rate was 70% (95% CI: 63-76; I^2 = 98%), below the sufficient levels required for a

successful long-term viral load suppression (Jessica, Thiago, Lara and Paula, 2018). In view of all above, various measures are adopted to enhance antiretroviral therapy utilization of which pictogram use occupies a key position. Therefore this study is aimed to assess theeffect of pictogram on the pattern of ARV utilization among HIV positive, treatment naïve patients who receive HIV care and antiretrovirals in NAUTH, Nnewi, Nigeria.

METHOD.

Study setting

The study was carried out in Nnamdi Azikiwe University Teaching Hospital, (NAUTH) Nnewi, Anambra State. The site offers tertiary health services to Anambra and other neighboring states in Nigeria. The ART program became operational in NAUTH since 2003 with the partnership of the Institute of Human Virology Nigeria (IHVN). NAUTH had very high pool of patients who were also willing to participate in the study. At the time of this study, the facility was recording an average of 200 daily pharmacy ARV dispensing, making a weekly average of a thousand clients (NAUTH Pharmacy, 2010).

Study design

The study was an intervention study

Study Population

The population comprised of HIV positive adults who were treatment naïve, coming to access HIV care in NAUTH Nnewi.

Care givers or treatment support partners stood in for clients clinically unfit to absorb and use medical instructions effectively.

Inclusion criteria

Included inthe study were treatment-naive HIV positive patients aged eighteen and above; being initiated into anti- retroviral medications/HAART; as well as patients who had undergone full treatment preparatory adherence classes and clinical psychology sessions.

Exclusion criteria

Those excluded from the study include all clients below eighteen years of age, adult clients who were either clinically unstable or with poor cognitive ability.

Sampling Technique

Simple random sampling method was employed in selecting participants for this study based on the eligibility criteria. The study group received their

pharmaceutical services with pictograms while the control group received same pharmaceutical services without pictograms.

Data CollectionMethod and Analysis

A pre-tested, semi-structured questionnaire was used to collect data from the respondents who met the inclusion criteria. However, where the patients had poor or impaired cognitive ability to comprehend and use medical instructions, their treatment supporters or care givers stood in their stead.

The questionnaires were self-administered bythe literate respondents and interviewer-administered by the trained research assistants using face to face for the poorly literate ones. This exercise lasted about 7 minutes on the average.

The pill count was also carried out by the research team. This took the form of announced pill count.

Results

All the respondents who started the survey, completed all their three appointments, giving a response rate of 100%. Among the participants 166 (51.55%) received their pharmaceutical counseling and dispensing of medications with the aid of pictograms while 156 respondents representing

48.45% of the study population received their pharmaceutical counseling and dispensing without the use of pictograms. Of the research participants, only 35.71% were males.

Results WITHOUT Pictograms (Control)

Demographic Variables of the Respondents in the
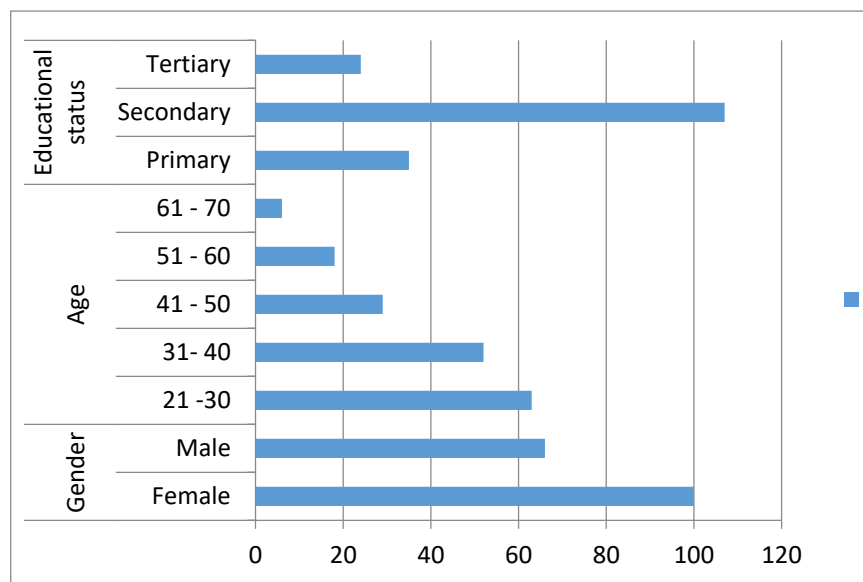
Control Group

Fig. 1 Socio-demographic Characteristics of the Respondents in the Control Group

This figure shows demographic variables of the control group respondents. A hundred

(64.1%) of the respondents were female. Majority of the respondents attained

secondary school education (107, 68.6%) and were aged between 20 to 30 years (62,

39.7%).

The Respondents' Observance of Medication Schedule
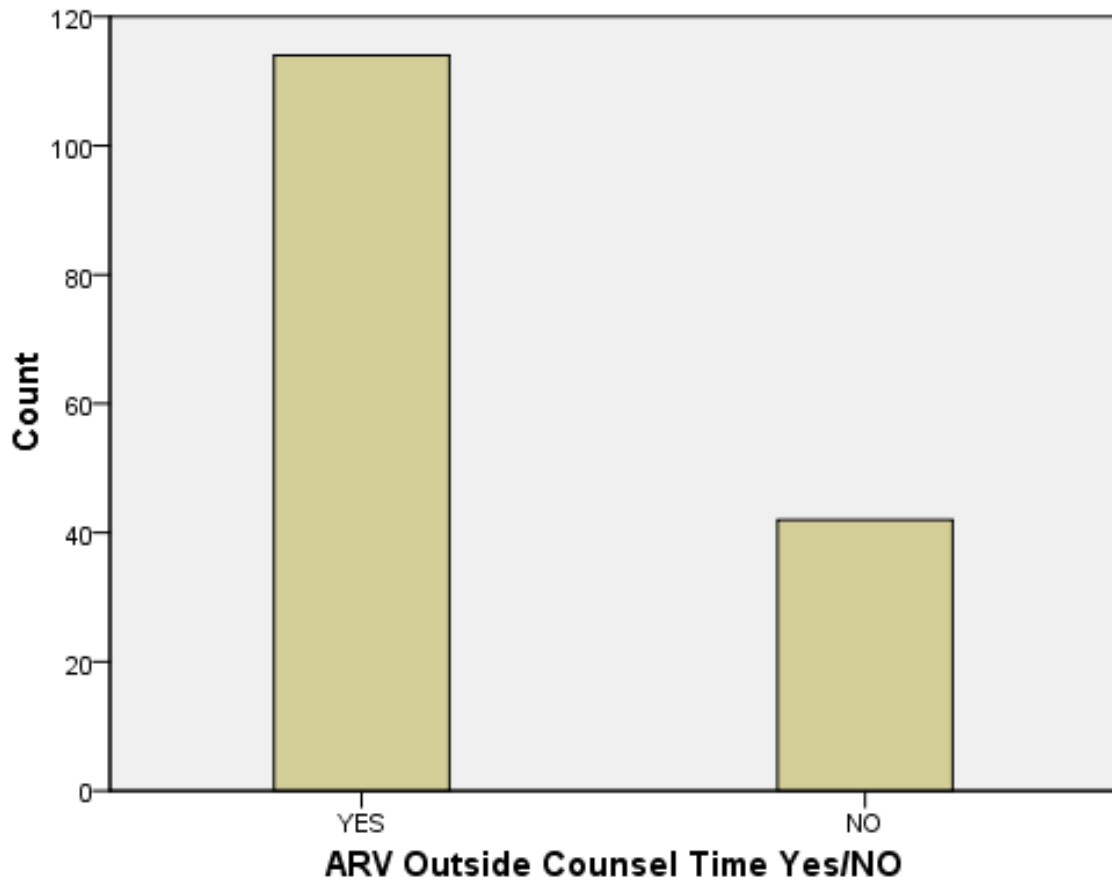
Fig. 2   1st Visit - ARV Outside Counseled Time

Figure 2shows information about the clients taking their medications within or outside

the counseled time on the first clinic visit which is within 30minutes circumference of

the particular time.

A greater population of the respondents 114(73.1%) took their medications outside

the counseled time on this first visit.

Tables 1 and 2 show information about the clients taking their medications within or outside the counseled time on the second and third clinic visits which is within 30minutes circumference of the particular time.

Table 1 2nd Visit - ARV Outside Counseled Time

	Frequency	Percent	Valid Percent	Cumulative Percent
YES	54	34.6	34.6	34.6
NO	92	65.4	65.4	100.0
Total	156	100.0	100.0	

By the 2nd visit, 54(34.6%) of the 156 respondents took their medications outside the counseled time

Table 2   3ʳᵈ Visit   -   ARV Outside Counseled

Time

	Frequency	Percent	Valid Percent	Cumulative Percent
YES	11	7.1	7.1	7.1
NO	145	92.9	92.9	100.0
Total	156	100.0	100.0	

The respondents taking or missing doses
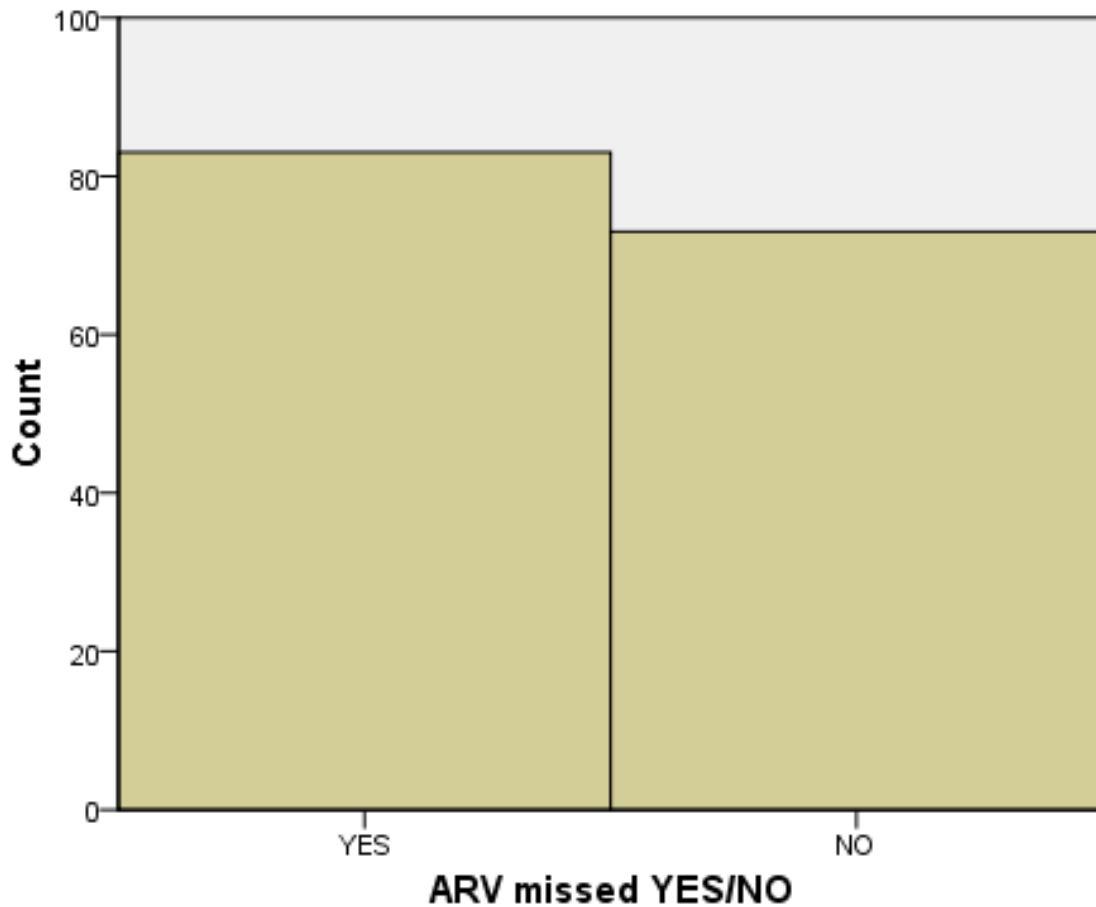
Figure 3 :1st Visit – ARV missed

Figure 3 shows information about the respondents taking their doses completely, missing any or actually missing more than one dose.

83 clients representing over 50% of the respondents in this group missed at least a dose of their medications by the first visit.

Tables 3 and 4 show information about the respondents taking their doses completely, missing any or actually missing more than one dose.

Tables 3: 2nd Visit - ARV missed

	Frequency	Percent	Valid Percent	Cumulative Percent
YES	63	40.4	40.4	40.4
NO	93	59.6	59.6	100.0
Total	156	100.0	100.0	

At the second clinic visit, 40.4% of the respondents missed at least one dose

of their medications.

Table 4: 3rd Visit - ARV missed

	Frequency	Percent	Valid Percent	Cumulative Percent
YES	30	19.2	19.2	19.2
NO	126	80.8	80.8	100.0
Total	156	100.0	100.0	

Only 19.2% of the respondents missed at least a dose by the third clinic visit.

Results with Pictograms (Intervention group)

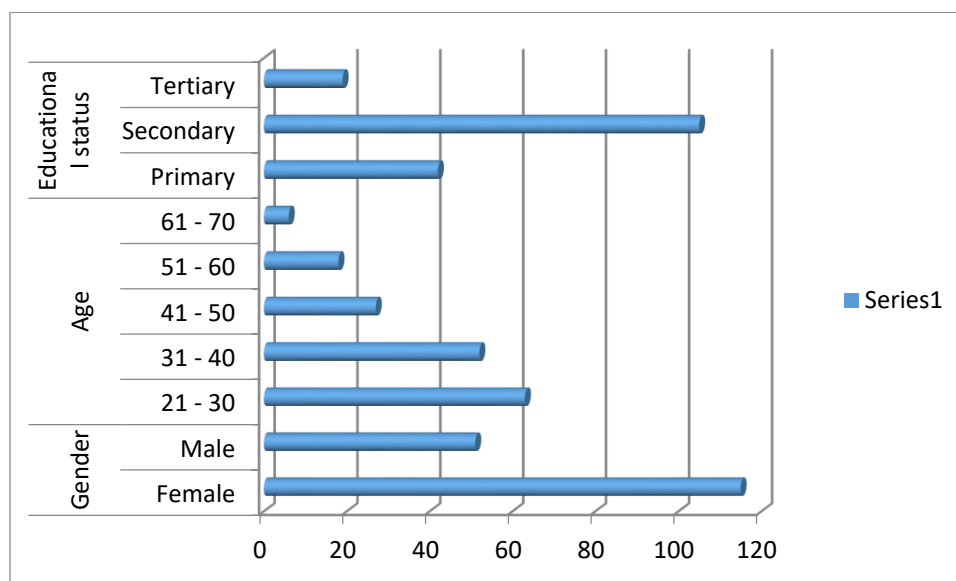**Demographic Characteristics of the Respondents**

Fig. 4: Socio-demographic characteristics of the Respondents in the Study Group

One hundred and five (63.3%) of the respondents had secondary education as their highest level of education. Participants in the age range of 21 – 30 years numbering 62(37.4%) constituted the highest population.

The Respondents' Observance of Medication Schedule

Table 5, 6 and 7 show information about the clients taking their medications within or outside the counseled time on the various clinic visits which is within 30minutes circumference of the particular time.

Table 5: 1ˢᵗ Visit - ARV Outside Counseled Time

	Frequency	Percent	Valid Percent	Cumulative Percent
YES	133	80.1	80.1	80.1
NO	33	19.9	19.9	100.0
Total	166	100.0	100.0	

133(80.1%) clients took their medications outside the counseled time.

Table 6:   2ⁿᵈ Visit   -   ARV Outside Counseled time

	Frequency	Percent	Valid Percent	Cumulative Percent
YES	51	30.7	30.7	30.7
NO	115	69.3	69.3	100.0
Total	166	100.0	100.0	

Here, 51(30.7%) of the 166 clients took their medications outside counseled

time

Table 7: 3ʳᵈ Visit - ARV Outside Counseled Time

	Frequency	Percent	Valid Percent	Cumulative Percent
YES	7	4.2	4.2	80.1
NO	159	95.8	95.8	100.0
Total	166	100.0	100.0	

By the 3rd clinic visit, only 7(4.2%) took medications outside counseled time.

Clients taking or missing their doses

Tables 8, 9 and 10 tell about the clients taking their doses completely, missing any, or actually missing more than one dose.

Table 8: 1st Visit - ARV missed

	Frequency	Percent	Valid Percent	Cumulative Percent
YES	59	35.5	35.5	35.5
NO	107	64.5	64.5	100.0
Total	166	100.0	100.0	

By this first clinic visit, 59 (35.5%) missed at least

one dose of their medications.

Table 9: 2nd Visit - ARV missed

	Frequency	Percent	Valid Percent	Cumulative Percent
YES	49	29.5	29.5	29.5
NO	117	70.5	70.5	100.0
Total	166	100.0	100.0	

29.5% missed at least one dose at the 2nd visit assessment.

Table 10: 3rd Visit - ARV missed

	Frequency	Percent	Valid Percent	Cumulative Percent
YES	18	10.8	10.8	10.8
NO	148	89.2	89.2	100.0
Total	166	100.0	100.0	

At the 3rd clinic visit assessment, only 18(10.8%) of the 166 respondents in this group missed at least one dose.

Table 11:Summary table of Clients achieving > or = 95% adherence

Visit	Adherence WITHOUT pictograms Frequency (n=156)	Percentage	Adherence WITH pictograms Frequency (N=166)	Percentage

1st visit	81	51.9	113	68.1
2nd visit	123	78.8	121	72.9
3rd Visit	145	92.9	157	94.6

While 92.9% of the clients who received their antiretrovirals without pictograms made 95% adherence, 94.6% of the intervention group made 95% adherence and above.

DISCUSSION

This study assessed the adherence of clients at every clinic visit during the period of the study. This is in accordance with the WHO recommendation that adherence to ART be assessed at every patient contact (HIV info 2019).

In this study, the intervention group in the 2nd and 3rd clinic visits showed lesser proportion of clients taking their ARVs outside the counseled time than what was seen with the control group where pictograms were not used for pharmaceutical counseling and dispensing. On the third visit, the counseled time adherence for the two groups was quite similar. While it was 92.9% for the control group, it was 95.8% among the intervention group. This may have been due to the consistency of pharmaceutical counselling at every clinic visit.However, in the 1st visit, the control group had lesser proportion of clients

taking their medications outside the counseled time. This study recorded more success on counseled time adherence than the work done in the USA on adherence assessment. They recorded 72% of counseled time adherence among the respondents(Beer and Jacek2015). This huge gap in counseled time adherence in the two locations could be due to fear of death among Nigerians having witnessed friends and relatives succumb in death to AIDS prior to the introduction of ART program. The USA study however was silent on the use of pictograms in the pharmaceutical counseling and dispensing of drugs.

In this study, for the three clinic visits, the intervention group consistently showed lesser proportion of clients missing doses than what was seen with the control group. While 35.5% of the intervention group missed at least a dose at the first clinic visit, the control group recorded a counterpart figure of 53.2%. At the third clinic visit, as the intervention group had only 10.8% of clients missing doses, the control group was 19.2%. This increased utilization of ARVs in the intervention group could be attributed to the use of pictograms in the pharmaceutical counseling and dispensing of ARVs in the group .However, reasonable proportion of the clients from the two groups missed no dose at all. This number kept increasing with the progress of clinic visits across the two client groups.

Through the clinic visits, it was found that there were varying proportions of respondents achieving or surpassing the 95% adherence rate. The lowest recorded proportion achieving ≥ 95% adherence was 51.9% of the control group clients in the first clinic visit while the highest proportion achieving ≥ 95% was seen with the intervention group on the 3rd clinic visit – 94.6%. These findings here are in absolute dissimilarity to the findings of Chukwuma et al in Ilorin, Nigeria where the highest recorded adherence was 92.8% (Chuhkwuma et al, 2019). The improved 95% adherence achievement may be due to heightened awareness and better acceptance of the ART among persons living with HIV/AIDS. This same contrasting situation was seen with other works done here in Nigeria. The study done at Aminu Kano Teaching Hospital, Kano study posted 54% as optimal adherence and that done in Federal Medical Center Makurdi was 62.6% (Zubairu et al 2005 andShaahu et al 2008).   In this index study, the intervention group always recorded higher success at achieving ≥ 95% drug adherence. However in the second clinic visit, the control group showed slightly higher percentage of clients (78.8%) achieving ≥ 95% adherence than that of the study group (72.9%). The reason for this was not ascertained in this study.

 In this study also, some proportions of the client achieved 100% adherence, missing no dose at all. This was seen to be consistently better with the intervention group in all the three clinic visits. The highest proportion of clients achieving 100% adherence among the control group was 80.8% while it was 93.4% with the intervention group both on the 3rd clinic visit. This huge gap can be attributed to the use of pictograms for pharmaceutical counseling and dispensing in the intervention group.

CONCLUSION

This study has shown that pictogram use in pharmaceutical counseling and dispensing had a positive effect on the utilization of antiretroviral therapy by the patients. The use of pictogram gave clear superiority to the non-use of pictogram in the antiretroviral utilization features assessed.

 The government, the coordinators of the HIV Care program, Implementation partners and indeed all stakeholders should give concerted efforts towards absorbing pharmaceutical pictograms as intrinsic component of the program. The use of pictograms in pharmaceutical counseling and dispensing of ARVs should also be promoted and encouraged especially at facility levels.

REFERENCES

Bezabhe WM, Chalmers L, Bereznicki LR, Peterson GM. (2016) *Adherence to Antiretroviral Therapy and Virologic Failure: A Meta- Analysis.* Medicine (Baltimore); 95(15)

Beer L, Jacek S. (2015) *Adherence to Antiretroviral therapy among HIV-infected adults in the United States.* AIDS Edu Prev.; 27(5):489

d'Acremont V, Malila A, Swai N, Tillya R, Kahama-Maro J, Lengeler C, et al., (2010). *Withholding antimalarials in febrile children who have a negative result for a rapid diagnostic test.* Clin Infect Dis 51:506-511

Chukwuma A, Oladele AA, Omotosho IM, Oladimeji AB, Kabir AD, AdeniyiO, Oluwole AB. (2019) *Adherence to combined Antiretroviral therapy (cART) among people living with HIV/AIDS in a tertiary Hospital in Ilorin, Nigeria.* The Pan African Medical Journal; 32:10.

Health literacy and Patient Education Guide: Pictogram (2019). https://hslibraryguides.ucdenver.edu/healthliteracy. Accessed 13/05/2019.

HIV Info. (2019). *HIV Treatment Adherence.* Available at https://aidsinfo.nih.gov. Accessed 05/08/2019.

Hornby AS (2000). Oxford Advanced Learner's Dictionary, 6th edition, Oxford University Press, Oxford, United Kingdom. Page 876.

Jessica de MC, Thiago ST, Lara EC, Paula ML. (2018) *Adherence to Antiretroviral Therapy to HIV/aids in Latin America and Carribean: Systematic Review and Meta-Analysis.* Journal of International AIDS Society, Vol. 21, Issue 1, 2018.

Piotr M, Damian S, Marcin B. (2018). *The evaluation of pharmaceutical pictograms among elderly patients in community pharmacy settings*. Patient Prefer Adherence v.12

United Nations *Sustainable Development Goals (2019).* https://sustainabledevelopment.un.org/sdg3.https://hivinfo.nih.gov/understanding-hiv. Accessd 13/05/19.

Shaahu VN, Lawoyin T and Sangowawa AO (2008). Adherence to Highly Active antiretroviral therapy(HAART) at a Federal Medical Center, Makurdi. African Journal of Medicine and Medical Sciences 37(1):29-36

Zubairu I, MD-Hazzaz BK, Isa SA and Musa B and Zubair ZA (2005). Compliance to antiretroviral therapy among AIDS patients in Aminu Kano Teaching Hospital, Kano, Nigeria. Nigerian journal of medicine: journal of the National Association of Resident Doctors of Nigeria. 14(3):290-4